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## Preparation, Physico-Chemical Analysis of *Jwarakesari Rasa*

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### ABSTRACT

Jwarakesari Rasa is one of the herbomineral compound explained in Rasendrasarasangraha<sup>1</sup> and indicated in Jwara disease. To establish standards for quality control this project was undertaken. Purity of Parada after Shodhan was found 98.45% (Purity of impure mercury was 98.08%). Purity of Gandhaka after shodhana was 98.62% (Purity of Gandhak in Ashodhit i.e. impure Gandhaka was 98.27%) Bulk density of Gandhaka of ashodhit Gandhak was 1.9433 gm/ml & of Shodhit was 1.9614 gm/ml. Jwarakesari rasa had shown Moisture content 11.40%, pH value 6.37%, Total Ash 3.42%, Acid insoluble Ash 1.80%, Water insoluble Ash 2.96%. In elemental analysis Jwarakesari Rasa shows Mercury content 11.12%, Sulphur content 36.87%.

### KEYWORDS

*Jwarakesari Rasa, Analytical study, Pharmaceutical study*



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## INTRODUCTION

For internal administration of metals and minerals i.e. Rasoushadhisin unprocessed and misprocessed form are toxic, but when scientifically shodhana & Marana of these substances are done with special processes, they become nontoxic & will be used therapeutically with high efficacy. For this standardization of Rasoushadhisin was necessary. As Jwarakesari contains Shodhit (mercury) Paraja, shodhit (sulphur) Gandhaka, Shodhit Vatsanabha, Triphala (Haritaki, Bibhitaki, Amalaki), Trikatu (Pippali, Marich, Sunthi), Sudha (Lime) Jayapal etc. hence this study was undertaken.

## AIM

To establish the physico-chemical standards for Jwarakesari Rasa.

## OBJECTIVES

1. To Prepare Jwarakesari Rasa as described in Rasendrasarasangraha. Adhyaya-2, Shloka 50-55.
2. To establish Physico-chemical Standards of Jwarakesari Rasa.

## Pharmaceutical Study

- a) Material and Methods<sup>1</sup>. (R.sa.sangraha 2 cha, 50-55)

## MATERIALS

1. Parada - 1 part

2. Gandhaka - 1 part
3. Vatsanabha - 1 part
4. Vyosha (Trikatu) - 1 part
5. Jayapal (Shudha) - 1 part
6. Triphala - 1 part

For Shodhana

1. Godugdha (Cow's milk)
2. Gomutra (Cow's urine)
3. Jala (Water)
4. Sudha (lime)
5. Rasonkalka (Garlic paste)

Instruments

1. Dolayantra
2. Vastra (cloth)
3. Sudha (lime)
4. Gas Stove
5. Khalvayantra
6. Weighing machine
7. Iron cauldron
8. Stirrer
9. Mud pot
10. Measuring cylinder.

## METHOD

### Preparation of Jwarakesari Rasa.

1. *Shodhan of Raw Materials*
  - a) Shodhana of Parada
  - b) Shodhana of Gandhak
  - c) Shodhana of Vatsanabha
  - d) Shodhana of Jayapala
2. *Preparation of Kajjali.*



### 3. Method of Preparation of Jwarakesari Rasa

#### 1. Shodhana of Processes

a) Parada shodhan with Sudha<sup>2</sup> (R.T.5/27-30)

Date of commencement- 5-3-2016.

Date of completion - 12-3-2016.

Ashodhi tParada – 100gm

Shodhit Sudha - 100gm

1. Ashodhit parada and shodhit sudha were taken in Khalvyantra & triturated continuously for 5hours daily for 7 days.

2. On eighth dayit was trichurated for 1 hour and colour of sudha got turned into Grey. Most of the Parada got collected in the middle of the khalva, which was shining. It was filtered by cloth and collected the Mercury. The remaining Sudha was washed with hot water & Parada was collected.

Collected ParadaWt – 98gm

Total loss – 2gm

b) Shodhana of Parada<sup>2</sup>– (R.T. 5/27-30)  
Start 15-3-2016. Complete 23-3-2016

Ashodhit Parada (Hg) = 98gm

Saidhava lavana (Nacl) = 50gm

Nistusha Lasuna (Uncovered Garlic) = 98gm

1. Parada and Nistushlashuna were taken in equal parts and it's half part Saindhava lavana was added & triturated well till the kalka turned to Krishna (black color) varna.  
2. This Kalka (paste) was washed with water & cleaned Parada was collected.

c) Gandhaka Shodhana<sup>2</sup>– (R.T. 8/7-12)

Date of commencement – 24-3-2016

Date of completion – 27-3-2016

(Sulphur) Gandhaka -100gm

(Cow ghee) Goghrita – 300gm

(Cow milk) Godugdha- 600ml

1. Previously weighed Gandhaka was powdered finely in Khalwa Yantra.

2. Powdered Gandhaka was taken in Lohadarvi (iron cauldron) which was smeared with goghrita (ghee) & then it was subjected to mandagni (mild fire). Stirred continuously.

3. When Gandhaka got melted completely, it was poured into vessel containing Godugdha by filtering through cloth.

4. Gandhaka was collected from godugdha & washed with hot water, dried and the process was repeated for 3 times. Shodhit Gadhaka was then stored in jar.

d) Vatsanabha Shodhana<sup>2</sup> – (R.T.24/19-25)

Date of commencement – 18-3-2016

Date of completion – 21-3-2016

Raw Vatsanabha -1kg

Gomutra- 2litre

Godugdha - Quantity according to requirement.

1. Small pieces of Vatsanabha were kept in gomutra in mud pot for 3 days in intense sunlight.

2. Daily fresh gomutra was taken for the study



3. Outer cover of Vatsanabha was removed after 3 days. Then dried it in intense sunlight for 2 days.

4. Dried pieces of Gomutra shodhit Vatsanabha were tied in cloth & potali was prepared.

5. Potali was immersed in Dolayantra containing Godugha & subjected for heating on mandagni & mandagni was maintained through out the procedure.

6. Procedure was continued for 3 hours.

7. Potali was taken out and pieces of Vatsanabha were thoroughly washed with hot water.

8. Pieces were dried in intense sunlight for 2 days.

9. Suddha Vatsanabha was obtained, it was stored.

*e) Jayapal Shodhana – (R.T.14/310-12)*

Date of commencement – 18-3-2016.

Date of completion - 25-3-2016.

Raw Jayapal -500gm

Godugha - Q.S.

Water (Jala)– Q.S.

1. Removed the upper covering of fruits first, then cut into two small pieces & removed thin green small layer.

2. Jayapalbeej were tied in cloth & potali was prepared.

3. The potali was immersed in Dolayantra containing Godugha & Subjected for heating on mandagni and mandagni was maintained throughout the Procedure.

4. The procedure was continued for 3 hours by maintaining warm Godugha level in Dolayantra .

5. Procedure was continued for 3 hours

6. Then Potali was taken out and Jayapalbeej were washed thoroughly with hot water.

7. Repeated the process for 3 hours.

## **2. Preparation of Kajjali – (R.T. 2/27-28)**

Date of commencement - 29-3-2016.

Date of completion - 5-4-2016.

Sudha Parada - 50gm.

Sudha Gandhaka – 50gm.

1. Sudha Gandhaka was taken in Khalwayantra (mortar) and made into fine powder.

2. Equal quantity of shudha Parada was added and trituration was done.

3. 8 hours trituration was carried out daily for 7 days, till black powder without shiny particles was obtained.

## **3. Preparation of Jwarakesari Rasa– (R.T.2/50-55 shloka)**

Samaguna Kajjali - 60gm

Shodhit Vatsanabha - 30gm

Shodhit Jayapala - 30gm

Trikatu - 30gm

Triphala - 30gm

1. The above mentioned ingredients were taken in dry and clean Khalwayantra.

2. Mixed well & triturated to get very fine powder.



3. Pills of Jwarakesari Rasa of one Gunja (120 mgm.) prepared with using water.

## OBSERVATION AND RESULT

1. Sudha shodhan-

Starting weight of Sudha-250gm

Final weight of Sudha after shodhana- 220gm

Total loss – 30gm

2. Parada shodhana with Sudha-

Ashodhit Parada = 100gm

Shodhit Parada= 98gm

Total loss -2gm

3. Parada shodhana with Rasona & Saidhava-

Wt. of shodhit Parada with Sudha – 98gm

Wt. of shodhit Parada with Rasona and sudha -85gm

Total loss – 13gm

4. Gandhaka shodhana-

Wt. of AshodhitGandhaka –100gms

Wt.ofShodhitGandhaka – 75gms

Total loss – 25gms

5. Preparation of samguna kajjali-

Wt. of SuddhaParada – 60gm

Wt. of SuddhaGandhaka – 60gms

Wt. of prepared Kajjali – 114gms

Totsl loss – 6gms

6. Vatsanabha shodhana in Gomutra –

Ashodhit Vatsanabha– 400gm

Final dried Shodhit Vatsanabha– 180gm

Total loss – 220gm

7. Vatsanbha Shodhana in Godugha-

Vatsanabha Shodhit in Gomutra– 180gm

Vatsanabha Shodhit in Godugdha – 80gm

8. Jayapal Shodhana-

Quantity of Jayapal- 600gm

Final dried Shodhit Jayapal -420gm

Total loss -180gm

9. Jwarakesari Rasa-

Total ingredient wt. of J.K.Rasa -180gm

Wt. of Jawarakesari Rasa -182gm

Total gain due to bhavana -2gm

## ANALYTICAL STUDY

**Table.1** Physicochemical Analytical Study of Ashuddha & Shuddha Parada-

Sr.No.	Parameters	Before Shodhana	After Shodhana
1.	<b>Specific Graity</b>	13.582 gm/cm <sup>3</sup>	13.60 gm/cm <sup>3</sup>
2.	<b>Moisture content</b>	Not detected	Not detected
3.	<b>Acid insoluble ash</b>	0.02%	0.49%
4.	<b>Assay for Mercury</b>	98.08%	98.45%

**Table 2** Physicochemical & Analytical Study of Gandhaka-

Sr.No.	Name of Test	Raw Gandhak	ShodhitGandhak
1.	<b>Melting point</b>	117 <sup>0</sup> c	116 <sup>0</sup> c
2.	<b>Luster</b>	Resinous	Resinous
3.	<b>Nature</b>	Crystalline lumps	Crystalline lumps
4.	<b>Transparency</b>	Translucent	Translucent
5.	<b>Hardness</b>	1.94	1.82
6.	<b>Density</b>	1.9433gm/ml	1.9614gm/ml
7.	<b>Solubility</b>	Carbon-di-sulfide	Carbon-di-sulfide
8.	<b>Effect of heat</b>	Evolution of SO <sub>2</sub>	Evaluation of SO <sub>2</sub>



9.	<b>Chemical reaction with Metal and gases.</b>	Mostly metal sulfide forms	Mostly metal sulphideforms
10.	<b>Assay of Sulphur</b>	98.27	98.62
11.	<b>Arsenic by AAS</b>	<1ppm	Not-detected
12.	<b>Cadmium by AAs</b>	1.92ppm	<1ppm



**Table 3** Ayurvedic Parikshana and analytical study of kajjali-

1. <b>Description</b>	Blackish in colour
2. <b>Odour</b>	Faint
3. <b>Moisture content</b>	11.40%
4. <b>Ash content</b>	3.42%
5. <b>Acid insoluble Ash</b>	1.80%
6. <b>Water insoluble Ash</b>	2.96%
7. <b>pH value</b>	6.37
8. <b>Mercury as Hg</b>	11.12%
9. <b>Sulfur as S</b>	36.87%

**Table 4** Analysis of Vatsanabha

1. <b>Shabda</b>	-
2. <b>Sparsha</b>	Shlakshna
3. <b>Rupa</b>	Black color powder
4. <b>Rasa</b>	-
5. <b>Gandha</b>	Typical odour
6. <b>Rekhapurna</b>	Yes
7. <b>Nischandrikatva</b>	Yes
8. <b>Weight</b>	114gms
9. <b>Moistur content</b>	0.67%
10. <b>Total Ash content</b>	0.76%
11. <b>Acid insoluble ash</b>	<0.1%
12. <b>Water soluble ash</b>	<0.2%
13. <b>Mercury content</b>	36.77%
14. <b>Sulfur content</b>	45.38%
15. <b>Free sulfur content</b>	2.03%

**Table 5** Physico-chemical Standards of Jwarakesari Rasa-

Sr.No.	Name of Parameter	Before Shodhana	After Shodhana
1.	<b>Moisture content</b>	2.67%	4.11%
2.	<b>Ash content</b>	4.27%	4.76%
3.	<b>Acid insoluble mater</b>	0.83%	0.59%
4.	<b>Water soluble extractives</b>	18.67%	19.08%
5.	<b>Alcohol soluble extractives</b>	17.02%	17.92%

## DISCUSSION

At the time of Parada Shodhana 13gm. loss of Parada was observed, this might be due to Jalagati & Hansagati.

In Gandhaka Shodhana process the 25gm loss was seen, due to physical impurities & chemical impurities removed from it.

In Vatsanabha Shodhana process 220gm. loss was observed.

In Jayapal shodhana 180gm.loss was observed In Jwarakesari Rasa moisture content 11.40%,Ash content 3.42%, Acid insoluble Ash 1.80%, water insoluble Ash 2.96%, pH value 6.37%, Mercury (as Hg) 11.12%, and sulfur 36.87% were observed by Chemical analysis.

## CONCLUSION

Organoleptic characters, physical constants, elemental analysis might contribute to establish standards for Jwarakesari Rasa.





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